

Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

John Corra, Director

November 30, 2009

Mr. Jim Sewell Senior Staff Environmental Engineer SWEPI, LP 4582 South Ulster Street, Suite 1400 Denver, CO 80237-2642

Permit No. CT-9080

Dear Mr. Sewell:

The Division of Air Quality of the Wyoming Department of Environmental Quality has completed final review of SWEPI, LP's application to establish federally enforceable conditions for the drill rig fleet located in the Jonah and Pinedale Anticline Development Area (JPDA) in Sublette County, Wyoming. All diesel fired drill rig engines will be equipped with selective catalytic reduction (SCR) to reduce NO_x emissions by ninety (90) percent.

Following this agency's proposed approval of the request as published September 18, 2009 and in accordance with Chapter 6, Section 2(m) of the Wyoming Air Quality Standards and Regulations, the public was afforded a 30-day period in which to submit comments concerning the proposed new source, and an opportunity for a public hearing. Public comments were received and have been considered in the final permit. Therefore, on the basis of the information provided to us, approval to construct the Drill Rig Fleet as described in the application is hereby granted pursuant to Chapter 6, Section 2 of the regulations with the following conditions:

- 1. That authorized representatives of the Division of Air Quality be given permission to enter and inspect any property, premise or place on or at which an air pollution source is located or is being constructed or installed for the purpose of investigating actual or potential sources of air pollution and for determining compliance or non-compliance with any rules, standards, permits or orders.
- 2. That all substantive commitments and descriptions set forth in the application for this permit, unless superseded by a specific condition of this permit, are incorporated herein by this reference and are enforceable as conditions of this permit.
- 3. That all notifications, reports and correspondences associated with this permit shall be submitted to the Stationary Source Compliance Program Manager, Air Quality Division, 122 West 25th Street, Cheyenne, WY 82002 and a copy shall be submitted to the District Engineer, Air Quality Division, 510 Meadowview Drive, Lander, WY 82520.
- 4. This permit only applies to the SWEPI, LP Drill Rig Fleet while operating in the Jonah and Pinedale Anticline Development Area (JPDA). The permit conditions contained herein are only enforceable while operating drill rigs in the JPDA.
 - i. The JPDA area consists of 109W & R110W in T34N, R109W & R110W in T33N, R108W, R109W & R110W in T32N, R108W, R109W & R110W in T31N, R107W, R108W & R109W in T30N, R107W, R108W & R109W in T29N, R108W & R109W in T28N, and R107W, R108W & R109W in T27N.

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- 5. That written notification of the actual date of initial start-up for each drill rig/engine/boiler is required fifteen (15) days after start-up as defined in Condition 10. Such notification shall be submitted on a complete AQD-RIG Installation/Removal form. The form can be downloaded from the Air Quality Division website http://deq.state.wy.us/aqd or obtained from the Air Quality Division.
- 6. That upon removal of a drill rig/engine/boiler from the JPDA, written notification is required within fifteen (15) days of removal. Such notification shall be submitted on a complete AQD-RIG Installation/Removal form.
- 7. That all drill rig engines shall be equipped with selective catalytic reduction (SCR).
- 8. Total actual annual NO_x emissions from all drill rig engines and boilers associated with the SWEPI, LP Drill Rig Fleet shall not exceed 140 tons per year (tpy) NO_x.
 - i. Total actual annual NO_x emissions from engines on any given drill rig in the SWEPI, LP Drill Rig Fleet shall not exceed 10 tpy per drill rig. This requirement shall become effective January 1, 2010.
 - ii. Drill rig engines shall be equipped with SCR with a minimum NO_x control efficiency of ninety (90) percent.
- 9. Ammonia slip from each SCR air pollution control system shall not exceed 10 ppm_v at 15% O₂ as measured by initial and periodic testing.
- 10. SWEPI, LP shall conduct an initial performance test for each drill rig engine no later than ninety (90) days after start-up. Startup shall be defined as follows:
 - i. For drill rig engines in service at the time of permit issuance, the start-up date shall be the permit issuance date.
 - ii. For all other drill rig engines, the start-up date shall be the date the drill rig commences drilling at the first well.

11. Initial performance testing as required by Condition 10 of this permit shall be conducted on the drill rig engines as follows:

 $\overline{NO_x}$ Emissions: Compliance testing for NO_x shall be conducted in accordance with EPA approved reference methods or the State of Wyoming's Portable Analyzer Protocol. Testing shall consist of three (3) runs conducted at the inlet and outlet of the SCR system to determine the NO_x control efficiency. Results shall be reported in terms of percent control efficiency and g/hp-hr. Emissions shall be calculated using the following equation:

g/hp - hr
$$NO_X = (ppm \ NO_{X_{corrected}})(1.19x \ 10^{-7})(F_factor)(\frac{20.9}{20.9 - O_2\%_{corrected}})$$
(Brake Specific Fuel Consumption(Btu / hp - hr))(10⁻⁶)(454)

<u>VOC Emissions</u>: Compliance testing for VOCs shall be conducted in accordance with a Division approved test method for one (1) engine of each engine type in the fleet.

<u>Formaldehye Emissions</u>: Testing for formaldehyde shall be conducted in accordance with a Division approved test method for one (1) engine of each engine type in the fleet.

<u>Ammonia Slip</u>: Compliance testing for ammonia slip shall be conducted in accordance with a Division approved test method.

Urea flow (gph), engine load (%), and catalyst inlet temperature shall be recorded during each run and submitted with the test report. The report shall also include the commissioning report by Johnson Matthey. Brake specific fuel consumption (BSFC) shall be reported with the results for both the initial performance test and the commissioning report.

A test protocol shall be submitted for review and approval prior to testing. Notification of the test date shall be provided to the Division fifteen (15) days prior to testing. Results shall be submitted to the Division within forty-five (45) days of completion.

- 12. That each drill rig engine shall be tested quarterly. The first quarterly test is required the following calendar quarter after completion of the initial performance tests required under Condition 11.
 - i. Testing for NO_x shall be conducted in accordance with EPA approved reference methods or the State of Wyoming's Portable Analyzer protocol. Testing shall consist of one (1) ten (10) minute run conducted at the inlet and outlet of the SCR system to determine the NO_x control efficiency. Results shall be submitted in terms of percent control efficiency and g/hp-hr. Brake Specific Fuel Consumption (BSFC) shall be provided in the report.

g/hp - hr
$$NO_X$$
 = (ppm $NO_{X_{corrected}}$)(1.19x10⁻⁷)(F_factor)($\frac{20.9}{20.9 - O_2\%_{corrected}}$)

(Brake Specific Fuel Consumption(Btu/hp-hr))(10⁻⁶)(454)

- ii. Testing for ammonia slip shall be conducted using Draeger-Tube detectors or other methods as approved by the Administrator.
- iii. Urea flow (gph), engine load (%), and catalyst inlet temperature shall be recorded during each run and submitted with the test report.
- iv. A test protocol shall be submitted for review and approval prior to testing. Notification of the test date shall be provided to the Division fifteen (15) days prior to the testing. Results shall be submitted to the Division with the annual emissions inventory required by Condition 14 of this permit.
- v. The Air Quality Division shall be notified within twenty-four (24) hours of the testing/monitoring required by this condition that shows operation outside the permitted emission limits. By no later than seven (7) calendar days of such testing/monitoring event, the owner or operator shall repair and retest/monitor the affected engine to demonstrate that the engine has been returned to operation within the permitted emission limits. Compliance with this permit condition regarding repair and retesting/monitoring shall not be deemed to limit the authority of the Air Quality Division to cite the owner or operator for an exceedance of the permitted emission limits for any testing/monitoring required by this condition which shows noncompliance.
- vi. In lieu of quarterly testing, SWEPI, LP may submit for approval an alternative monitoring plan. A minimum of one (1) year of quarterly testing is required before an alternative plan will be considered. If approved, the Division will administratively amend this permit to incorporate the alternative monitoring plan.
- 13. SWEPI, LP shall follow the monitoring and maintenance requirements for each of the permitted engines equipped with a SCR system.
 - i. Operate and maintain the engine, SCR system, and monitoring equipment according to good air pollution control practices. The SCR system shall be operated at all times the drill rig is operating in the JPDA, except when the engine catalyst inlet temperature is less than 500°F. Records shall be kept to document periods when the SCR system is not operating and the engine is operating. The records shall include date, duration and cause.
 - ii. Operate the SCR Emission Control System in accordance with the Johnson Matthey Preventative Maintenance and Service Contract which includes visually inspecting the catalysts and cleaning as necessary. Records shall be maintained of catalyst maintenance and replacement. Upon replacement of the catalyst, performance tests as required by Condition 11 shall be conducted.
 - iii. Records of urea flow (gph), engine load (%), and catalyst inlet temperature shall be recorded, at minimum, daily when the engine is operating. Records of interim spot checks conducted to verify catalyst condition and any maintenance or corrective actions shall be kept for a period of at least five (5) years and shall be made available to the Division upon request.

- iv. On or before January 1, 2010, all drill rigs shall be equipped with a datalogger to record urea flow (gph), engine load (%), and catalyst inlet temperature. Data shall be recorded on an interval of fifteen (15) minutes or less. Records shall be kept for a period of at least five (5) years and shall be made available to the Division upon request.
- 14. SWEPI, LP shall report the following for each well drilled.
 - i. Drill Rig ID
 - ii. Well API number
 - iii. Well name
 - iv. Well location (longitude, latitude, elevation)
 - v. Drilling start and end dates
 - vi. Field name
 - vii. Equipment description, controls, and site rating
 - viii. Brake specific fuel consumption (BSFC)
 - ix. Total fuel usage for drill rig engines and boilers recorded on a daily basis
 - x. Heat content and sulfur content of fuel burned recorded from supplier certification
 - xi. Actual emissions for NO_x, CO, VOC, SO₂, PM₁₀, ammonia, and formaldehyde
 - 1. For engines, emissions shall be based on fuel consumption, g/hp-hr emission rates, and BSFC. Information recorded in Condition 13 regarding catalyst operation shall be utilized to calculate emissions from the engines.
 - 2. For boilers, emissions shall be based on fuel consumption, lb/MMBtu emission rates or AP-42 factors converted to lb/MMBtu, and BSFC.

The format presented in Appendix A shall be utilized to satisfy reporting requirements for the Division's annual emission inventory, which shall be submitted by March 31 of the following calendar year.

- 15. That drill rigs, boilers or engines that are subject to the conditions of this permit may be replaced without modifying this permit. SWEPI, LP shall provide notifications as required by Conditions 5 and 6 of this permit. The replacement drill rig(s)/engine(s)/boiler(s) shall comply with the conditions of this permit.
- 16. All records required under this permit shall be kept for a period of at least five (5) years and shall be made available to the Division upon request.
- 17. That should drill rig engine(s) meet the definition of a stationary source, SWEPI, LP shall comply with all state and federal regulations applicable for stationary sources.
- 18. SWEPI, LP shall comply with all local, state, and federal rules and regulations applicable to the drill rig fleet.

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It must be noted that this approval does not relieve you of your obligation to comply with all applicable county, state, and federal standards, regulations or ordinances. Special attention must be given to Chapter 6, Section 2 of the Wyoming Air Quality Standards and Regulations, which details the requirements for compliance. Any appeal of this permit as a final action of the Department must be made to the Environmental Quality Council within sixty (60) days of permit issuance per Section 16, Chapter I, General Rules of Practice and Procedure, Department of Environmental Quality.

If we may be of further assistance to you, please feel free to contact this office.

Sincerely,

David A Finley

Administrator Air Quality Division

cc: Tony Hoyt

John V. Corra

Director

Dept. of Environmental Quality

Appendix ADrill Rig Emission Reporting Form

Drill Rig Emissions - 2009

ample data	entries prov	ded below	for January	through De	cember 200	9)			· · · ·	
		2009 Dril	l Rig Diese	l Fuel Cons	sumption					
	Rig #1 (gallons)	Rig #2	Rig #3	Rig #4	Rig #5 (gallons)	Rig #6	Rig	Wells	Jan	Totals
nuary 1			1,572	1,800	2,070		Rig #1	Well #1	(gallons) 41,995	(gailons) 41,995
2	1,600 1,700	1,850 2,054	2,390	1,800	1,380	1,755 1,990	rug #1	Well#2	41,885	
3 4	1,500 1,500	1,848 1,221	1,572 1,889	1,800 1,440	2,070 1,380	1,726 1,274	Rig #2	Well #3	19,696	41,995 19,696
5 6	1,600 1,000	1,848 2,054	1,753 1,591	1,800 1,620	2,300 1,840	1,345 978		Well#A Well#S	37,138	37,138
7	600	1,848	1,591	1,620	1.870	745	Di. #2		24.000	56.834 31,060
9	1,000 1,200	2,054 811	1,462 1,809	1,400 1,620	1,840 1,610	1.784	Rig #3	Well #6 Well #7	.,31,060 19,579	19,579
10 11	1,200 1,500	1,848 1,233	1,572 1,594	1,620 1,440	1,840 1,610	2 387 21 761		Well#9	•	50,639
12 13	1,200 1,300	1,027 1,027	1,978 1,897	1,440 1,800	1,840 1,840	7 4 1 991 1 866	Rig #4	Well #9	42,580 8,620	42,580 8,620
14 15	1,300 1,122	1 307 2 054	2,341 1,992	1,700 1,440	1.610 1.610			Walletti	-	51,200
16	1,496	1.849	1,580	1,800	37,1840	1876	Rig #5	Well #12	23,490	23,490
17 18	1,122 1,122	1 849 2 054	1,343 1,134	1,620 1,080	1 840 1 840	723		Well#18 Well#16	33,510	33,510
19 20	855 1,496	2 259		2,340 1,860	11,810 2,070	1920	Rig #6	Well #15	9,068	57,000 9,068
21 22	1,870 1,663	1 644 2 054	1 591 1 608	2,180 1,980	1.840 1.840	11785		Welleag Wellear	38,110	38,110
23	1,496	2,865	2.112	1,580	1,820			Well-18	-	
24 25	2,203 1,309	2 259 1 643	1521 1572	1,620 1,280	2 300	985				47,178
26 27	1,496 1,309	2 157 1 951	1 594 31 588 61 608	900 1700	2.070 2.070	824 853 950				
28 29	1,309 1,309	2 054	600	1 0005	1.840 1.1.840	769				
30	1,309	2,054	1,608	1 980	1 8409	789				
31	1,309 (gallons)		(galjons)	(gallons)	(gallons)	(gallons)				
btotal	41,995	56,834	50,639	51,200	57,000	47,178				
	Rig #1	Rig #2	Rig #3	Rig #4	Rig #5	Rig #6			W. 1 14 13 000 Mar. 2011	
bruary					(gallons)		Rig	Wells	<u>Feb</u> (gallons)	Totais (gallons)
1 2	1,600 1,700	1,850 2,054	1,572 2,390	1,800 1,800	2,070 1,380	1,755 1,990	Rig #1	Well#2	38,068	38,068
3 4	1,500 1,500	1,848 1,221	1,572 1,889	1,800 1,440	2,070 1,380	1,726 1,274	Rig #2	Well #3	19,696	38,068 19,696
5	1,600	1,848	1,753 1,691	1,800 1,620	2,300 1,840	1,345 978	7 11/4 11 11	Well#A Well#5	30,976	30,976
7	600	1,848	1,591	1,620	1,870	45-745				50,672
8 9	1,000 1,200	2,054 811	1,462 1,809	1,400 1,620	1,840 1,610	1.794	Rig #3	Well #6	31,060 14,755	31,060 14,755
10 11	1,200 1,500	1,848 1,233	1,572 1,594	1,620 1,440	1,840 1,610	2,387		Walles	-	45,815
12	1,200	1.027	1,978	1,440	1,840	1 991	Rig #4	Well #9	42,580	42,580
13 14	1,300 1,300	1 027 1 307	1,897 2,341	1,800 1,700	1,840 (8)16102	1,866 9,511,945		Well#10 Well#11	2,680	2,680
15 16	1,122 1,496	1,307 2,054 1,849	1,992 1,580	1,440 1,800	1610	1 990 1 876	Rig #5	Well #12	23,490	45,260 23,490
17 18	1,122 1,122	1 849 2 0541	1,343 1,134	1,620 1,080	1840	1628		Wall#18 Wall#16	27,990	27,990
19	855	1/850	7776	2,340	1810	1,920				51,480
20 21	1,496 1,870	2 259 1 644 2 054	1/0/ 1/591	1,860 2,180	12.070 1.840	1 395 1785	Rig #6	Well #15 Well #16	9,068 35,803	9,068 35,803
22 23	1,663 1,496	2 054 2 865	21.608 2.112	1,980 1,580	31840 381820	1747		Well#ii/ Well#ii/	-	-
24 25	2,203 1,309	2 259 5 1 643	综论[152]	1,620 1,280	241840 242300	1789				44,871
26	1,496	2/1575	ACCUPATION.	900	1 820	824				
27 28	1,309 1,309	1951 2054	1 586 1 608	700 1,980	2 2 070 1 840					
btotal	(galions) 38,068	(gallons) 50,672	(gallons) 45,815	(gallons) 45,260	(gallons) 51,480	(gallons) 44,871				
Call Maria		4, 5, 11	g jang	Sec. 750	4 W 1924	1984	国际代码的	3 - 1 - 2 3 73	en Partien	Barra Arris
rch		Rig #2 (gallons)		Rig #4 (gallons)		Rig #6 (gallons)	Rig	Wells	Mar (gallons)	<u>Totais</u> (gallons)
1 2	1,500 800	11427	1,389 1,580 1,398	2.180	1.840 1.850 41.840	735) 1637	Rig #1	Well #1 Well #2	5,200 31,822	5,200 31,822
3	900	2 259	11398	161,800	A11840	2490			01,022	37.022
4 5	1,200 800	1848	1,903 1,294	1,980 1,260	1,840 1,850	637 11,808	Rig #2	Well#3	10,656	10,656
6 7	800 800	82605 3 821	1903 1291 1769 1888	261,800 1,620	1(510)	186 159		Wall 5	38,856	38,856 49,512
8 9	9500 9500	6241 1),266	-0.070 0.070	1440	10000000000000000000000000000000000000	1,977 2,152	Rig #3	Well#6	22,447	22,447
10	MARK OUT I	1 227	- B00	440	1(610	1799		Wall#8	25,588	25,588
11 12		(EXB) (EXB) (EXB)		1 440 1 440	160 260 180 180 180 160 160	1.730 9.634	Rig #4	Well #9	-	48,035
13 14	1/160 1/500	1232 1232	935 1000		100	1(835) 1(835)		Wellsiio Wellsiii	37,400 10,270	37,400 10,270
15	11122	THE YES	1250		100	9.090 9.090	D) - 4E	Well #12		47.670
16 17	1455 989	14045)	1470	41/100	1640	2854	Rig #5	Well#13	10,730	10,730
18 19	1,122	2650	1473 1691 1691 1692	0.600 0.600	2070	\$1,1072		Wall#14)	41,160	41,160 51,890
20 21	1,122	061 11,620	11.5522 11.7091	*41/300	ിത്ത	600 600	Rig #6	Well #15		*
22	102	iees	1,163	1000 1200 1000	1070	75C		Well#16 Well#17 Well#16	38,736	38,736
23 24	(12) (22) (23)	200	11,600	日本のできるようよう	11550	060 Shoo		wellste	4,119	4,119 42,855
25 26	1300 1 22	1) Z62 300	1500 1705	750 1,230	20 <u>70</u> 1970	720 650				
27 28	11,309		14160 14600	1,930	1600	920 (350				
29	1:650	(1845) 2054	0,696 0,696 0,674)	(720 (820	160 160	699				
30	1,500 1,500	2510 1223	1,074	1(520) 1(620)	160 189	956 1.199				
ıbtotal	37,022	49,512	48,035	47,670	51,890	42,855				

Drill Rig Emissions - 2009

ampie data	entries prov					9)		···		
	·		Rig Natura		•	m				
	Rig #1 (gallons)	Rig #2 (gallons)	Rig #3 (galions)	Rig #4 (gallens)	Rig #5 (gallons)	Rig #6 (galions)	Ria	Wells	Jan	Totals
nuary 1	1,600	1,850	1,572	1,800	2,070	1,755	Rig #1	Well #1	(gallons) 41,995	(gallons) 41,995
2	1,700 1,500	2,054 1,848	2,390 1,572	1,800 1,800	1,380 2,070	1,990 1,726		Well#2	-	41,995
4	1,500	1,221	1,889	1,440	1,380	1,274	Rig #2	Well #3	19,696	19,696 37,138
5 6	1,600 1,000	1,848 2,054	1,753 1,591	1,620	2,300 1,840	1,345 978		Wells	37,138	-
	600 1,000	1,848 2,054	1,591 1,462	1,620 1,400	1,870 1,840	745 1.794	Rig #3	Well #6	31,060	56,834 31,060
9 10	1,200 1,200	811 1,848	1,809 1,572	1,620 1,620	1,610 1,840	11,453 12,387		Well#7	19,579	19,579
11 12	1,500	1,233	1,594	1,440	1,610 1,840	(4) 761	Ria #4	Well #9	42,580	50,639 42,580
13	1,300	1.027	1,897	1,800	1,840	1 991 1 866	rag ##	Well#10	8,620	8,620
14 15	1,300 1,122	1 307 2 054	2,341 1,992	1,700 1,440	1610 1610	1,945 1,990		Wellkiski	-	51,200
16 17	1,496 1,122	1 849 1 849	1,580 1,343	1,800 1,620	1 840 2 1 840	1 876 3 1 623	Rig #5	Well #12	23,490 33,510	23,490 33,510
18	1,122	2 054	1,134	1,080	1 840 1 810	724		Well#13 Well##14		57,000
19 20	855 1,496	2.259	776 707	2,340 1,860	2.070	1 920 1 395	Rig #6	Well #15	9,068	9,068
21 22	1,870 1,663	1 6448 2 0541	1 591 1 608	2,180 1,980	1 840 1 840	5 51 785 -1 484		Well#16 Well#507	38,110	38,110
23 24	1,496	2 865 2 259	2 112	1,580 1,620	1:820 1:840	1.747		Well-fill Well-fill	-	47,178
25	1,309	1 6439	20:1:572	1,280	2,300	1,985				11,175
26 27	1,496 1,309	2 157 11 951	1,594 Rev 1,586	900 700	1.820 2.070					
28 29	1,309 1,309	42.054 42.054	1,608 1,608	1.980 1.980	1 840 1 840	769 769				
30	1,309	2,054 2,054	1 608	1 980	1.840	769				
31	1,309 (gallons)	(gallens)	(gallons)		(gailons)	(gallons)				
ubtotal	41,995	56,834	50,639	51,200	57,000	47,178				
Articient.	Rig #1	Rig #2	Rig #3	Rig #4	Rig #5	Rig #6		1 4 75 (1 to 15		
ebruary			(gallons)		(gallons)		Rig	Wells	<u>Feb</u> (gallons)	<u>Totals</u> (gallons
1 2	1,600 1,700	1,850 2,054	1,572 2,390	1,800 1,800	2,070 1,380	1,755 1,990	Rig #1	Well#1 Well#2	38,068	38,068
3 4	1,500 1,500	1,848	1,572 1,889	1,800 1,440	2,070 1,380	1,726 1,274	Rig #2	Well #3	19,696	38,068 19,698
5	1,600	1,848	1,753	1,800	2,300	1,345	rug wa	Well#4	30,976	30,976
6 7	1,000 600	2,054 1,848	1,591 1,591	1,620 1,620	1,840 1,870	978 4-4-745		Well#5	•	50,672
8 9	1,000 1,200	2,054 811	1,462 1,809	1,400 1,620	1,840 1,610	1 794) 1 453	Rig #3	Well #6 Well #7	31,060 14,765	31,060 14,755
10	1,200	1,848 1,233	1,572	1,620 1,440	1,840 1,610	2.387 3.1761		Well#8	-	45,816
11 12	1,500 1,200	1,027	1,594 1,978	1,440	1,840	1,991	Rig #4	Well #9	42,580	42,58
13 14	1,300 1,300	1,027 1,307	1,897 2,341	1,800 1,700	1,840 1,610	1 866		Well#10 Well#10	2,680	2,680
15 16	1,122 1,496	2.054	1,992 1,580	1,440	1.610	1,990 1,876	Rig #5	Well #12	23,490	45,260 23,490
17	1,122	791849	1,343	1,620	11840 1840	1623		Wall#16	27,990	27,990
18 19	1,122 855	\$462,054 1,950	1,134 776	1,080 2,340	11840 1810 2070	1,724 1,920				51,480
20 21	1,496 1,870	2 259 31 844	TO THE PARTY OF	1,860 2,180	2,070 1,840	1 1 395 1 785	Rig #6	Well #15 Well #16	9,068 35,803	9,068 35,800
22 23	1,663 1,496	2 054 2 865	1,603	1,980 1,580	1 840 1 820	1/484 1/747		Well-Sir Well-Sir	-	-
24	2,203	2,259	521	1,620	1 840	1.789		1110000000		44,87
25 26	1,309 1,496	9 11643 2 157	172 594	1,280 900	1.2300 1.820	1!985 824				
27 28	1,309 1,309	971,951 2 054	1 586 1 608	1/980	2 070 1 840	950 769				
ubtotal	(gallons) 38,068	(gallons) 50,672	(gallons) 45,815	(qalions) 45,260		(gallons) 44,871				
Mench C (1989)	1458414	, V*18 K 15		50 - 174, S			TENNIS OF MARK IS	(s. sattier	\$\$5 - 1868.) c 16 + 1	* 5127 (78%) 813
	Rig #1 (gallons)	Rig #2 (gallons)	Rig #3 (gallons)	Rig #4 (gallons)	Rig #5 (gal(ons)	Rig #6 (gallons)	Ria	Wells	Mar	Totals
arch	1,500	2000/0078	**************************************				Rig #1	Well #1	(gallons) 5,200	(gallons 5,20
2	800	1848	41580	1,800	1 840 71 850 7 1 840	781 (1697 2499		Well#2	31,822	31,82
3 4	900 1,200	12 259 1 848 1 1 848	1398 1903 1294	1980	1 840 1 840 1 850	2,495 935 1,309	Rig #2	Well #3	-	37,02
5 6	800 800			485118007	SSEN1"5101	1,608 1,645		Well#4 Well#5	10,656 38,856	10,65 38,85
7 8	008	821	1986 1870	641 620 1744	1,030 450	1(69)	Rig #3	Well#6		49,51
9	950 9600	128	1870		900	2,152	L/M M-O	Well #7	22,447	22,44
10 11	900 11600	ieed	1010 1070	1440	1610 2070 1610 1810	2,152 1,765 1,763 1,521		Walles	25,588	25,58 48,03
12 13	1,150 1,150	1849	DESCRIPTION OF	1440 1440 1620	100	1,594 1,956	Rig #4	Well #9 Well #10	37,400	37,40
14 15	1500 1122	1282	120		1000	(1,956) (1,935) (1,959)		Well#Ell	10,270	10,27 47,67
16		205	1890	1 620	1610 11240	1,230	Rig #5	Well #12		-
17 18	1,309		(1976) 1375 C	11620 11480 41800 11800	14840 14860	1,830 2,850 1,870		Well#13 Well#13	10,730 41,160	10,73 41,16
19 20	1122 1122	2050		1800 1800 1800	1,550 2,070 1,070	0.00 600	Rig #6	Well #15	_	51,89
21	1,496	1646	11.700	1 800	3 ~ 1241 (0)	600 750		Wall#16 Wall#30	20 726	29.72
22 23	1122 1455		14,000 14,0007	(1260 (1080	100 1630	950		Well-50	38,736 4,119	38,73 4,11
24 25	211309	1232	11.634) 11.634)	750 750	2000	11,012 7240				42.85
26 27	11 <u>122</u> 11009	139(0)	160 170 160 160	1/230 1/330	1070	(31) (20)				
27	1122	1,620	1500	11760 11760 11820	100	930				
	1,850		1890	1620 1620	1,620 1,610	939 939				
29 30	1.500									
29	1,500 1,500	1498	1112	14620	1830	1488				**

Drill Rig Locations & Emissions
(Sample data entries provided below)
List all wells drilled by each rig, showing the order of progression of wells drilled throughout the year
(Add additional rows as needed to provide data for each well drilled)
Input negative values for Rig Bollers under column heading "Site Rating"

* Use emission factors from actual test data and attach test results inclusive of tested rate
**Emission factors from annufacturer or AP-42 may be used if test data is not available

Emission factors from manufacturer or AP-42 may be used if te				-		1		1	1	Drilling	Drilling	ıa	Т	Hours	Natural	Heat Diese		Heat	Dieset	Heat			Drill Ric	Emission	ission Factors		Em'	dissions for	om Drilling		Stack P	k Parameters		
Rig ID	Equipment	Controls	API#	Lo	cation (WG:	S84)	Well Name	Field	Well Spud	Formation	Start	End	well	Site Rating	Operated to	Gas Use		Fuel Use		Sulfur	Input of	BSFC	NO _x	со			нсно	NO C	aluante.	ucuo.	SO Unio			
Itig io	Description			Lat	Long	Elev	1	Name	Date		Date	Date	Depth		Drill Well	per Well	Natural Gas	per Well	Diesel Fuel	Content	Fuel			CO	VOC	PMIO	нсно	NO _x CC	J VOC P	nta HCHO	SO ₂ Heigh	temp	velocity	Diamet
	<u> </u>					feet		-						hp or (MMBtu/hr)		mscf	Btu/scf	gal	Btu/gal	ppm _w	MMBtu	Btu/hp-hr		g/hp-h	r* or (lb/Mi	//Btu)**			Tons per	r Welf	ft	۰F	ft/sec	ft
Rig #1 - H&P 000	Cat 3512CDITA Diesel	Tier 2	49-035-2593	42.47183	-109.70750	7,179	Stud Horse Butte 41-22	Jonah	12/16/07	Lance	2/3/08	2/14/08	11,751	1,476	288		1,000	15,431	130,000 130,000 130,000	500	2,006	7,389	4.80	8.50	1.00	0.40	0.00	1.44 2.5	4 0.30 0	.12 0.00	0.05 16,40	63D.55	98.40	0.66
	Cat 3512CDITA Diesel	Tier 2				<u> </u>						ļ		1,476	288		1,000	15,431	130,000	500	2,006	7,389	4.80	8.50	1.00	0.40	0.00	1.44 2.5	4 0.30 O.	.12 0.00	0.05 16.40	630.55	98.40	0.66
		None		ļ	L				L	 			44.000	(6.3)	144		1,000	4,209	130,000	500	547	7,000	(0.15)	(0.036)	(0.0022)	(0.015)	(0.00045)	0,04 0.0	1 0,00 0,	00 0.00	0.01 13.00	344.00	17.50	1.29
₹ig #1 - H&P 000	Cat 3512CDITA Diesel	Tier 2	49-035-2575	42.47132	-109.70708	7,187	Stud Horse Butte 41-22	Jonah	12/13/07	Lance	2/24/08	3/6/08	11,679	1,476	264	_	1,000	3,628	130,000	500	472	0,/62	4.80	8.50	1.00	0.40	0.00	0.37 0.6	5 0.00 0.	03 0.00	0.011 16.40	1 630.55	99,40	0.66
	Cat 3512CDITA Diesel	None		-		 			1					1,476	264 123	 	1,000	1.052	130,000	500	137	6 200	(0.15)	(0.036)	(0.0022)	(0.015)	(0.00045)	0.01 0.0	20 0.00 0	00 0.00	0.001 13.00	344.00	17.50	1.29
	Rig Boiler	None	3rd well c	Irillad using	1 7 Dia #1 - US	R DOD (Cor	ntinue for next well drille	d usina Ria	#1 - followi	ng the above	o format)	_	 	10.0/	120		1,000	1,002	100,000	1	—	- 0,200	(51.57.	10.000,	70,000	14.5.15/	,,,,,,	-	7			1		
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Rin #2 - H&P 001	Cat 3512CDITA Diesel	Tier 2	49-035-2504	42 47187	1-109.7076	7.179	Stud Horse Butte 21-22	Jonah	12/13/07	Lance	2/13/08	2/24/08	11.638	1,476	288	T	1,000	15,431	130,000 130,000 130,000	500	2,006	7,389	4.80	8.50	1.00	0.40	0.00	1.44 2.5	4 0.30 0	12 0.00	0.05 16.40	630.55	98.40	0.66
19 112 1101 001	Cat 3512CDITA Diesel	Tier 2	10 000 200 1	15.17.107	1000700	1 1,113		,						1,476	288 144		1,000	15,431	130,000	500	2,006	7,389	4.80	8,50	1.00	0.40	0.00	1.44 2.5	4 0.30 0	.12 0.00	0.05 16.40	630.55	98.40	0.66
	Rig Boiler	None			Ī	1								(6.3)	144		1,000	4,209	130,000	500	547	7,000	(0.15)	(0.036)	(0.0022)	(0.015)	(0.00045)	0.04 0.0	01 0.00 0.	00.0	0.01 13.00	344.00	17.50	1,29
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